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ABSTRACT

The Catalyst project at Indiana University sought to increase awareness of research ethics questions among the faculty, graduate students, and undergraduates, and to develop and disseminate instructional materials. The participating departments were biology, history, and psychology, representing, respectively, the natural sciences, the humanities, and the behavioral sciences. The mechanism used for the project was a faculty-graduate student seminar. During the first project year, participants discussed issues of research ethics in their respective fields. During subsequent years, participants developed and field tested teaching materials designed to introduce discussion of research ethics into subject matter courses (e.g., upper-division genetics, experimental psychology, or history seminars for majors). The project has produced over 80 case studies, which will be published. An interdisciplinary seminar and a conference on research ethics were also undertaken. Project evaluation included a 1993 student survey, which indicated that the project increased students' knowledge about research ethics. A faculty survey was administered in 1990 and again in 1993 to evaluate the impact of the project. An outcome of the project has been the introduction of two graduate seminars and one undergraduate course covering research ethics or the responsible conduct of science. (SW)

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ED 415 765

Catalyst: Indiana University's Program in Research Ethics

Grantee Organization:

Indiana University
The Poynter Center
410 North Park Avenue
Bloomington, IN 47405

Grant Number:

P116B91110-91

Project Dates:

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Ending Date: July 31, 1992
Number of Months: 36
[Extended for 10 months to May 31, 1993]

Project Director:

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Grant Award:		
	Year 1	$66,208
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	Year 3	$86,544
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HE 030 911

PROJECT SUMMARY

The goal of this project, dubbed "Catalyst," was threefold: (1) to increase awareness of research ethics questions among IU faculty, graduate students, and undergraduates; (2) to develop instructional materials; and (3) to disseminate those materials to faculty at IU and other universities. The participating departments were Biology, History, and Psychology, representing the natural sciences, the humanities, and the behavioral sciences, respectively. The mechanism used for the project was a faculty-graduate student seminar. During the first year of the project, participants discussed issues of research ethics in their respective fields. During subsequent years, participants developed and field-tested teaching materials designed to introduce discussion of research ethics issues into subject-matter courses (e.g., upper-division genetics, experimental psychology, or history seminars for majors). The Catalyst project has produced over eighty case studies, which will be published by Indiana University Press. The anticipated publication date is summer, 1994.

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Resulting Publications:

Doing it Right: Cases and Materials on Ethics in Research. Robin Levin Penslar, ed. (Bloomington, IN: Indiana University Press, forthcoming).

EXECUTIVE SUMMARY

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A. Project Overview

The Catalyst project was a faculty and student development project designed to increase awareness of the ethical issues raised by the conduct of research, particularly in the university setting. The goal of the Catalyst project was threefold: (1) to increase awareness of research ethics questions among IU faculty, graduate students, and undergraduates; (2) to develop instructional materials; and (3) to disseminate those materials to faculty at IU and other universities. The participating departments were Biology, History, and Psychology. During the first year of the project, participants discussed issues of research ethics in their respective fields. During subsequent years, participants developed and field-tested teaching materials designed to introduce discussion of research ethics issues into subject-matter courses (e.g., upper-division genetics, experimental psychology, or history seminars for majors).

B. Purpose

The goal of the Catalyst project was both faculty development and student development. We sought to increase the university community's concern with research ethics issues; that is, to raise the level of awareness of the ethical components of research among students and faculty. It was not our purpose to inculcate particular points of view (e.g., that the use of animals in research is ethical or not ethical), but rather to help faculty and students to see the ethical issues raised by the conduct of research and to learn how to work through them analytically.

C. Background and Origins

The Catalyst project grew out of our university's desire to respond to national concern over the responsible conduct of research, particularly in the sciences. In addition to preparing administrative procedures for responding to allegations of research misconduct, as required by (then) new federal regulations, we wished to institute a program through which we could educate the university community about the ethical issues raised by the conduct of research and their importance, thereby ensuring that the responsible conduct of research was high on the instructional agenda.

D. Project Description

The mechanism used for the project was a faculty-graduate student seminar, which met bi-weekly over the three-year funding period. The first year of the project was spent discussing research ethics issues from each of the three disciplines plus ethical theory and pedagogical issues. The second and third years were spent developing cases. During the first year, the participants from each department were responsible for preparing readings and conducting discussions on four topics they felt were pressing issues in their field (i.e., each department was responsible for two sessions each semester). The Poynter Center also presented two sessions each semester. Center staff assisted participants in identifying appropriate reading materials.

During the second year, each department was responsible for producing two cases or case units per semester. The presenting department would chair the session at which the materials they prepared would be discussed, both substantively (as if the seminar were a class) and pedagogically. The presenters, together with Center staff, would then revise the case in light of the comments at the seminar.

The seminar's third year was divided into two stages. First, the cases from the second year were subjected to the review of the participants' colleagues. Each department invited several colleagues to read and critique their cases. The first cohort of cases was then revised by Center staff and distributed to IU faculty in the participating departments, other IU faculty who either had expressed an interest or who we identified as potentially interested, and others around the country who we thought could provide useful comments. Distribution of these "working drafts" was done for the purpose of obtaining comments based on classroom experiences with them.

In the second part of the third year, the participating faculty wrote and presented a second cohort of cases. Center staff, in consultation with participating faculty, also produced a number of case units.

In addition to the seminar, we invited a number of outside speakers to campus for public addresses. We also called upon IU faculty and other experts to present sessions to the seminar that they either requested (e.g., on copyright and patents) or that we thought would be of interest to them.

The closing event of the project was a conference, the purpose of which was both evaluation and dissemination. We invited faculty from institutions around the country who we felt could benefit from learning more about the Catalyst project and who could provide us with useful feedback about the project and its products.

Several salient features may be noted:

1. The seminar was interdisciplinary, which we feel added to its success, both because it forced participants to clarify issues and added perspective to the discussion.

2. Recruiting faculty who were both active, well-respected researchers as well as first-rate teachers was critical to the credibility of the project within the departments.

3. The participants, rather than Center staff, wrote the cases, which gives them the

ring of authenticity they might not otherwise have had, and added to the participants' sense of commitment to the project.

4. Dissemination of the cases began informally, through personal recommendations and announcements in organizational newsletters. This had a word-of-mouth "snowball" effect, so that the cases are now in high demand. They will be published by Indiana University Press in the fall of 1994.

5. Evaluation of the impact of the project on students has been difficult and time-consuming.

E. Project Results

The hoped-for results of the Catalyst project were (1) increased awareness of research ethics issues on the part of IU faculty and students, (2) the development of instructional materials for use in discussing research ethics issues, and (3) the dissemination of those materials to faculty at IU and other institutions. The accomplishment of the latter two goals is self-evident. (We have developed a significant corpus of materials and their publication will ensure that they will continue to be distributed to faculty here and around the country.) Measuring whether or not we accomplished the first goal, however, may prove elusive, despite our best efforts.

We developed an evaluation program that was designed to answer the question of impact on the IU community. That program consisted of internal and external reviews of the project process, reviews of the contents of the product of the project (i.e., the cases), and measures of the impact of the project on a campus-wide basis, on both faculty and students.

A student survey was the primary mechanism through which we attempted to measure the impact of the project on students. The survey was administered twice to students in the participating departments: baseline data were collected in the spring semester of 1991; follow-up data were collected in the spring semester of 1993. The goal was to try to determine, in an aggregate manner, whether there was any change in students' awareness of research ethics issues when comparing the time period before the cases were in use in the classroom and after they came into use. Further, the survey should measure whether the seminar had any effect on the departments' teaching more generally; that is, whether the participating faculty and their colleagues are raising research ethics issues in their classes more now than they did before.

The results of the student survey indicate that while student awareness of research ethics issues has remained fairly constant over the period of the project, there has been a significant increase in the intensity of teaching on research ethics issues at IU. As a result, students in 1993 felt better informed about research ethics than they did in 1991. Faculty participation in the Catalyst project contributed significantly to this result.

The impact of the project on IU faculty was measured by a survey mailed to all faculty in the participating departments. They survey was administered once in 1990 and again in 1993. Low return rates for these surveys places significant limitations on the conclusions that can be drawn from them. Nonetheless, several interesting conclusions can

be drawn. First, faculty indicate that they pay more attention now to research ethics than they did in 1990. Second, faculty are talking about research ethics issues more often with their colleagues than they did in 1990.

A further result of the project has been the introduction of several new course offerings on research ethics or the responsible conduct of science. Two graduate seminars and one undergraduate course are now being offered. In addition, several faculty in the participating departments are now using various of the Catalyst materials. Further, though we do not know the numbers, at least some of the faculty who have requested copies of the cases are using them (as per telephone conversations or written communications).

An important byproduct of the project is that the Center has developed an expertise that has been and will continue to be of value to the entire University community.

F. Summary and Conclusions

The Catalyst research ethics project achieved its stated goal of raising the awareness of faculty and students of the ethical component of research, and produced a sizable corpus of teaching materials that are being made widely available for teaching at the graduate and undergraduate levels. Persons interested in conducting a similar project should consider it worth the time and effort required to carry it out.

REPORT

Project Overview

The project we have just completed was designed to address the perception by many, including the federal institutions that fund biomedical research (i.e., the Public Health Service and the National Institutes of Health), that insufficient attention is being paid to the ethical questions presented by the conduct of research in the last quarter of the twentieth century. This inattention has led, it is posited, to an increase, or at least a perceived increase, in the number of instances in which academics violate the research standards of their profession. The Catalyst project was intended to have an impact both on faculty and on students at all postsecondary levels, undergraduate and graduate. We thought that if we could get faculty to see that these are serious issues worth considering, that they would begin to discuss them with their colleagues and to teach about them in the classroom.

When we began, there was no forum in which discussions of research ethics was taking place among faculty on this campus. It was not known whether and to what extent questions of research ethics were being discussed in the classroom (aside from specific courses focused on ethics). We brought together faculty and graduate students from the Departments of Biology, History, and Psychology (representing the natural sciences, the humanities, and the behavioral sciences, respectively) so that we might raise their awareness of research ethics issues that arise in their disciplines. They in turn developed teaching materials for use with students, both graduate and undergraduate.

In the end, the seminar produced over eighty case studies, many of which have been used here at IU and at other universities around the country. After making drafts available to faculty for field-testing purposes (colleagues of our participants, members of the Association for Practical and Professional Ethics, others we thought could provide useful comments), we began to receive more and more requests for them. Convinced of dramatic increase in discussion of research ethics issues on campuses throughout the United States (in part because of a requirement by the National Institutes of Health that their training grant recipients receive instruction in the responsible conduct of science) and a significant demand for teaching materials, we have agreed to publish the cases with Indiana University Press so that they will be more widely available. On our own campus, three new course offerings have been developed by participants in the project: a semester-long survey in applied ethics focused on the ethics of research (Religious Studies); an required graduate course in Biology; a monthly seminar for graduate students and postdoctoral fellows of a NSF-funded Research Training Group (Psychology and Biology).

Purpose

The goal of the Catalyst project was both faculty development and student development. We sought to increase the university community's concern with research ethics issues, to raise the level of awareness of the ethical components of research. It was not our purpose to inculcate particular points of view (e.g., that the use of animals in research is ethical or not ethical), but rather to help faculty and students to see the ethical issues raised

by the conduct of research and to learn how to work through them analytically.

We do not believe that our understanding of the problem has changed over the course of the project. The problem is one of identifying the ethical issues raised by the conduct of research and working through how those issues might be handled. The one addition to defining the problem that we might make is that faculty need some instruction in teaching research ethics. Addressing this problem was beyond the scope of the Catalyst project.

The Catalyst model is, we believe, a good one that is easily transportable to any campus. The administrative pitfalls that we would advise people about are first, that it takes an enormous investment of staff time to run it properly and second, that we found it difficult to involve graduate students in the seminar in a meaningful way. Were we to do it again, we would rework that component, perhaps by having a more even ratio of faculty to graduate students, perhaps by running a parallel seminar with only graduate students, or some other configuration. Further, strong administrative support for the project is essential. We had the support not only of IU's Vice President for Research, but also of the chairs of each of the departments involved. As a result of the project, these relationships are even stronger than they were when we began.

Background and Origins

As mentioned earlier, the project grew out of our university's desire to respond to national concern over the responsible conduct of research, particularly in the sciences. In addition to preparing administrative procedures for responding to allegations of research misconduct, as required by (then) new federal regulations, we wished to institute a program through which we could educate the university community about the ethical issues raised by the conduct of research and their importance, thereby ensuring that the responsible conduct of research was high on the instructional agenda.

The Catalyst project was run by staff members of the Poynter Center for the Study of Ethics and American Institutions, an independent research unit at Indiana University. The Center's staff consists of a director, an administrative assistant, three research associates, a program associate, several graduate student assistants, and a secretary. The staff assigned to the Catalyst project included the director, a research associate, two graduate assistants, and a secretary. No staff member was budgeted on the project for more than fifty percent FTE. The University is a major public research institution. While the Center receives some financial support from the University and the Center's initial endowment, funds for programs (such as the Catalyst project) come from extramural grants and contracts. Additional intramural support (University matching funds) helped to fill out the resources necessary to conduct the project. Because the project required a great deal more staff time than originally anticipated, University support was crucial to the project's success. In particular, the University's Office of Instructional Consulting and Research (formerly the Learning Resources Center), which assisted in our evaluation program, has invested an enormous amount of time and effort, well beyond what was anticipated at the beginning of the project.

Project Description

The Catalyst project was a faculty and student development project designed to increase awareness of the ethical issues raised by the conduct of research, particularly in the university setting. The goal of the Catalyst project was threefold: (1) to increase awareness of research ethics questions among IU faculty, graduate students, and undergraduates; (2) to develop instructional materials; and (3) to disseminate those materials to faculty at IU and other universities. During the first year of the project, participants discussed issues of research ethics in their respective fields. During subsequent years, participants developed and field-tested teaching materials designed to introduce discussion of research ethics issues into subject-matter courses (e.g., upper-division genetics, experimental psychology, or history seminars for majors).

The mechanism used for the project was a faculty-graduate student seminar, which met every two weeks over the three-year funding period. The participating departments were Biology, History, and Psychology, representing the natural sciences, the humanities, and the behavioral sciences, respectively. The first year of the project was spent discussing research ethics issues from each of the three disciplines plus ethical theory and pedagogical issues. The second and third years were spent developing cases. During the first year, the participants from each department were responsible for preparing readings and conducting discussions on four topics they felt were pressing issues in their field (i.e., each department was responsible for two sessions each semester). The Poynter Center also presented two sessions each semester. Center staff assisted participants in identifying appropriate reading materials. A copy of the seminar schedule is attached as Appendix A.

During the second year, each department was responsible for producing two cases or case units per semester. The presenting department would chair the session at which the materials they prepared would be discussed, both substantively (as if the seminar were a class) and pedagogically. The presenters, together with Center staff, would then revise the case in light of the comments at the seminar. A copy of the seminar schedule is attached as Appendix A.

The seminar's third year was divided into two stages. First, the cases from the second year were subjected to the review of the participants' colleagues. Each department invited several colleagues to read and critique their cases. Most of the sessions in the first semester, therefore, were given over to this kind of discussion. The first cohort of cases was then revised by Center staff and distributed to IU faculty in the participating departments, other IU faculty who either had expressed an interest or who we identified as potentially interested, and others around the country who we thought could provide useful comments. Distribution of these "pilots" (or "working drafts," as they have come to be known) was done for the purpose of obtaining comments based on classroom experiences with them. (An evaluation form was distributed with each set of cases, and the recipients were asked to respond).

In the second part of the third year, the participating faculty wrote and presented a second cohort of cases. Center staff, in consultation with participating faculty, also produced a number of case units. The satellite faculty, who had initially been asked only to commit to attending a single "critiquing" session, continued to attend sessions for the remainder of the

year. A copy of the third year schedule is attached as Appendix A.

At the end of the third year, we found ourselves with a second cohort of cases that needed revision. We therefore asked for and received a no-cost extension so that we might have time to complete these cases, revise the first cohort, and prepare for final dissemination of the materials. We continued to distribute the first cohort of cases (what we have called the "working drafts") on request.

In addition to the seminar, we invited a number of outside speakers to campus for public addresses. In year one, we hosted two lecturers: Robert Sprague, Director, Institute for Research on Human Development, University of Illinois, Champaign-Urbana; and Preston Covey, Director, Center for the Design of Educational Computing and the Center for the Advancement of Applied Ethics, Carnegie Mellon University. Professor Sprague spoke about academic fraud and misconduct, especially his experience as the "whistleblower" in the Stephen Breuning case. As part of his visit to campus, we sponsored a noontime discussion with faculty and students, which provided an excellent forum for exchange of ideas and experiences. Professor Covey came to campus to present a videodisc system he and his team at the CDEC developed that deals with ethical issues. It is an interactive teaching tool, and we explored with him the pedagogical issues associated with the use of such technological innovations for the teaching of ethics.

Our public lecture in year two was given by Ned Feder and Walter Stewart of the National Institutes of Health. Mr. Stewart and Dr. Feder spoke on the response of the scientific community to questioned research practices, focusing on the David Baltimore case. In addition to the public lecture, we arranged a noontime gathering of students to talk informally with Mr. Stewart and Dr. Feder about research ethics issues. The focus here was both on institutional problems of the scientific and university communities and on relevant problems that the students face as participants in the institution of higher education.

We also called upon IU faculty and other experts to present sessions to the seminar that they either requested (e.g., on copyright and patents) or that we thought would be of interest to them. In year one, Susan Wright, Residential College, University of Michigan, addressed the topic, "Science and Social Responsibility: Biologists' Responses to the Expansion of Military Programs in the Life Sciences in the 1980's." Professor Wright also gave a public address entitled, "The Formation of Regulatory Policy for Genetic Engineering in the U.S. and Britain" as part of a conference, "Technological Choices: American and European Experiences" which was being held on the IU campus. A second presentation was given by Martha Crouch, IU Department of Biology. Dr. Crouch addressed the question of researchers' responsibility for the fruits of their research, a topic of great interest to the seminar. Professor James Madison, IU Department of History, and Professor Daphne Patai, Women's Studies and the Department of Spanish and Portuguese, University of Massachusetts, Amherst, spoke with the seminar about conflict of interest issues in the humanities. Each had had first-hand experience with conflict issues, which shed considerable light on many of the conflicts questions that arise in the humanities that had, up until then, been difficult to get at in earlier sessions. The value of occasional outside guests was nowhere more apparent than in this session.

In the second year, the seminar enjoyed two guest presentations. In the First, Marshall Leaffer, a professor of copyright and patent law at the University of Toledo,

discussed legal issues relevant to the ownership of intellectual property and their relationship to the ethical issues concerned. The second presentation was by Joan Hoff, a professor of history at IU. Professor Hoff's discussion focused on the responsibilities of oral historians toward the creation of historical documents (i.e., the transcript of the oral history interview), toward the subject of the interview, and toward the profession. Center staff, working together with Dr. Hoff, developed her presentation into a case unit.

We also videotaped several of the classes in which the cases were field-tested. Videotaping was done by the Audio-Visual Department's Media Production Services. The purpose of the videotapes was to enable our faculty to view their own and each others' teaching experiences in order to learn from them. We also hope to be able to use the videotapes in the future for teaching purposes. With some editing, they may be the basis for promotional materials for dissemination purposes.

The closing event of the project was a conference, the purpose of which was both evaluation and dissemination. We invited faculty from institutions around the country who we felt could benefit from learning more about the Catalyst project and who could provide us with useful feedback about the project and its products. Copies of the conference schedule and list of attendees is attached as Appendix B.

In our view, the Catalyst project has been extremely successful. Outlined below are several aspects of the project, discussion of which will be useful for readers.

The Interdisciplinary Seminar

We intentionally included participants from a disparate collection of departments. As mentioned, those departments were biology, history, and psychology, representing the natural sciences, the humanities, and the behavioral sciences, respectively. The interdisciplinary nature of the seminar added immeasurably to the value of the project. As we had anticipated, including persons from different fields of study both pushed the participants to focus and clarify issues specific to their fields and also added perspective to the discussion of those issues which cut across disciplines. Another, perhaps unexpected, benefit of this arrangement was simply the exposure of persons from different research traditions to each others' practices and norms. This latter phenomenon was particularly rewarding with respect to the interplay between the historians and the scientists.

Recruitment

When pulling the seminar together, the first issue we confronted was recruiting faculty and graduate students to participate in the project. Our primary criteria were that the participants be both active, well-respected researchers and as well as first-rate teachers. The department chairs, each of whom had participated in the planning of the project, provided us with the names of faculty to approach. One department solicited volunteers from its faculty and selected likely candidates from among those who expressed an interest. We then met with each of the potential participants and discussed the project with them. While we initially envisioned having one member of each department and one graduate student from each department participate, we ended up with two from each department (except

Psychology, from which we had three -- two who work with animal subjects and one who works with human subjects). The decision to include a second member from each department was pragmatic: if one person couldn't come to a meeting, the other probably could; they could also split the work. In fact, the expansion proved important substantively: Just as the interdisciplinary nature of the seminar was an important feature, so too were the different viewpoints each pair brought to the table; not only did the biologists learn from the historians, the biologists learned from each other.

The project also called for the inclusion of "satellite" faculty members: faculty who would come to sessions but not be responsible for developing cases. The inclusion of additional faculty was to be a form of outreach to the departments (i.e., dissemination). We introduced satellite faculty in the third year of the project, initially to provide critiques of the cases developed in year two. Happily, many of these faculty continued to come to sessions at which new cases were presented throughout the remainder of year three. One set of satellite faculty, the historians, also assisted in the development of two case units. The satellite faculty were invited at the suggestion of the core participants. They numbered thirteen. An additional satellite participant was a faculty member from the Department of History and Philosophy of Science who joined the seminar during its first year.

Thus, the core seminar comprised seven faculty and four graduate students during the first two years (plus four project staff persons), with the addition of thirteen faculty from the participating departments during the third year. In addition, a faculty member from the History and Philosophy of Science Department joined the seminar part-way through the first year.

Drafting the Cases

An interesting and, we feel, significant feature of the project is that the faculty and graduate student participants produced the bulk of the teaching materials. In our original conception, the participants were to assist the Center staff in writing the cases, but would not themselves do most of the writing. In fact, however, the participants' drafting of the cases was a natural outgrowth of the first year's seminar, and essential to the cases' authenticity. Our participants wanted to see cases that contained a lot of factual set-up and not just presentation of issues. Frustrated by the Center's attempts at capturing these details, the biologists took the lead in developing case units rich in detail and realism. The others followed in kind.

Our approach was to conceive the materials as flexibly as possible, to give the participants the widest possible creative latitude. We did not want to force them into a "case" format. Thus, the historians initial approach, perhaps predictably, was to produce teaching materials that are text-based: students read a code of ethics and discuss its meaning, limitations, and application; they read an article about the experience of a group of oral historians and discuss the ethical problems those historians encountered as well as critique the historians' view of what those problems were; they "grade" a student essay constructed from a text and identify the problems in the use of the historical document. Later cases take a more "traditional" vignette approach.

We also did not limit or direct the participants' selection of topics. The cases

therefore deal with those subjects the participants chose to write about. As a result, the materials do not cover every aspect of research ethics, but rather those issues that were foremost in our participants minds. The cases address a wide range of research ethics issues including problems in determining appropriate authorship, particularly in collaborative settings; when and how to correct the published record when new data alter earlier findings; plagiarism and other issues in crediting authors; conflicts of interest; treatment of human and animal subjects; the use of deception in research; the role of codes of ethics; responsibilities associated with editorial control; and the implications of scientific research for society as a whole (through the vehicle of genetic research).

We are convinced that their sense of ownership in the materials (as well as their interest in the subject) kept the participants highly committed to the successful completion of the project (though they may not admit as much if asked). As a result of the interactions that followed, we have twenty case units (comprising more than eighty individual cases) that have been well-received by those who have seen them.

Dissemination

When working drafts of the first cohort of cases were completed, we distributed them to faculty in the participating departments, as well as to faculty around the country whom we thought could provide us with useful comments. We also announced their availability in several newsletters, including our own and the newsletter of the Association for Practical and Professional Ethics (APPE). In addition, the project co-directors, either alone or with one of the Catalyst participants, have given presentations at various conferences or other settings. Among the presentations given were: Society for Applied Sociology (October 1990), APPE annual conference (March 1992), the Harvard Program in Professional Ethics (May 1992), the Lilly Ethics Seminar (June 1991 and June 1992), Women in Science and Engineering (WISE; October 1992), Center for the Study of Law and Society (IU; March 1993). At each of these presentations, attendees were given the opportunity to request copies of the cases. In addition to the cases distributed unrequested to IU and other faculty, we have received requests from over 200 faculty from around the country and around the world. Many of the requests are from word-of-mouth recommendations. At this writing, we continue to receive letters and telephone calls requesting copies of the materials.

These requests have led us to reconsider the appropriate method of disseminating the final versions of the cases. In our original proposal, we planned to distribute the cases through Indiana University's Audio-Visual Center, which has a highly-developed system for distributing educational materials. Before turning to the Audio-Visual Center, however, we decided to try an even more easily accessible distribution system, that is, publication through an academic or commercial publisher. As it happens, the first publisher we contacted, Indiana University Press, accepted the casebook for publication. We anticipate that it will be available for purchase in time for the 1994-95 academic year.

Evaluation

While evaluation will be discussed in greater detail in the next section, it is worth

mentioning here because of the enormous amount of effort that has gone into our evaluation program. Anyone attempting to conduct a program such as the Catalyst project should seriously consider the kind of evaluation that will be required and the resources that must be committed to the evaluation's successful execution. It has absorbed a considerable amount of energy and has required an investment of time and resources well beyond those conceived of prior to the beginning of the project. Our evaluation program consisted of internal and external reviews of the project process, reviews of the contents of the product of the project (i.e., the cases), and measures of the impact of the project on a campus-wide basis.

Project Results

The hoped-for results of the Catalyst project were (1) increased awareness of research ethics issues on the part of IU faculty and students, (2) the development of instructional materials for use in discussing research ethics issues, and (3) the dissemination of those materials to faculty at IU and other institutions. The accomplishment of the latter two goals is self-evident. (We have developed a significant corpus of materials and their publication will ensure that they will continue to be distributed to faculty here and around the country.) Measuring whether or not we accomplished the first goal, however, may prove elusive, despite our best efforts.

We developed an evaluation program that was designed to answer the question of impact on the IU community. That program consisted of internal and external reviews of the project process (by Ronald Pipkin in year one, by Gregory Lebel and Anne Bednar in year two, and by Edmund Hansen in year three), reviews of the contents of the product of the project (i.e., the cases; by Gregory Lebel and Nicholas Steneck in year three), and measures of the impact of the project on a campus-wide basis (data on the impact on faculty taken by Anne Bednar (1990) and Edmund Hansen (1993) and data on the impact on students taken by the Center and analyzed by Edmund Hansen). Copies of all evaluation reports are attached as Appendix C.

The student survey is the primary mechanism through which we attempted to measure the impact of the project on students. With the assistance of the University's Office of Instructional Consulting and Research, we developed and administered the survey to over 2,600 students in the participating departments. The survey was divided into two phases: baseline data were collected in the spring semester of 1991; follow-up data were collected in the spring semester of 1993. The survey was administered in courses identified by our participants as those most appropriate for discussions of research ethics. In the History Department, for example, we surveyed undergraduate and graduate seminars, historiography courses, and other courses in which papers were regularly assigned. In Psychology, we surveyed research methods courses as well as courses in experimental psychology and other courses in which the involvement of human and animal subjects are issues. We administered the survey in 37 classes in the spring of 1991 and in 33 classes in the spring of 1993. We matched the classes in the follow-up survey as closely as possible with those from the baseline survey. For example, if possible, we re-surveyed the same course taught by the same professor. If that wasn't possible, we surveyed the same course taught by a different professor. If the same course wasn't taught again, we surveyed the courses most like it, if

possible, taught by the same professor. The goal was to try to determine, in an aggregate manner, whether there was any change in students' awareness of research ethics issues when comparing the time period before the cases were in use in the classroom and after they came into use. Further, the survey should measure whether the seminar had any effect on the departments' teaching more generally; that is, whether the participating faculty and their colleagues are raising research ethics issues in their classes more now than they did before. A description of the evolution of the survey design is described in a paper presented to the Society for Applied Sociology in October, 1990, a copy of which is attached as Appendix D.

The survey provides students with a list of issues that students we had interviewed identified as research activities that raise ethical issues. It then asks students to answer three questions: (1) Do any of the following actions raise an ethical issue for you?; (2) Have you heard about the following issues in a class at IU?; and (3) How well do you feel informed about ethical problems that might be connected with each of the following actions? The questionnaire also asks for demographic information, as well as whether the student has taken courses from any of the participating Catalyst faculty. In the follow-up survey, students were also asked the following questions: (1) whether they believe that issues of research ethics (such as those listed) have an important effect on people's lives; (2) whether they talk about such issues with their friends or classmates; and (3) whether they think that issues of research ethics should be a regular part of class discussions. Copies of the survey instruments for both the baseline and follow-up surveys are attached as Appendix E. The results of the surveys are described in the reports of Edmund Hansen, which are included in Appendix C along with the other evaluation reports.

The results of the student survey indicate that while student awareness of research ethics issues has remained fairly constant over the period of the project, there has been a significant increase in the intensity of teaching on research ethics issues at IU. As a result, students in 1993 felt better informed about research ethics than they did in 1991. Faculty participation in the Catalyst project has significantly contributed to this result. For details supporting these conclusions, see the memorandum from the Center for Media and Teaching Resources (by Edmund Hansen) dated July 14, 1993, in Appendix C.

The impact of the project on IU faculty was measured by a survey mailed to all faculty in the participating departments. They survey was administered once in 1990 and again in 1993. The low return rates for these surveys places significant limitations on the conclusions that can be drawn from them. Nonetheless, several interesting conclusions can be drawn. First, significantly more History faculty responding in 1993 indicated that, as compared with one year ago, they pay more attention now to research ethics than did faculty responding to the same question in 1991. Psychology faculty are, similarly, talking about research ethics issues more often with their colleagues than they did in 1990. See the memorandum from the Center for Media and Teaching Resources (by Edmund Hansen) dated July 14, 1993, in Appendix C.

Further evidence of the impact of the project on IU faculty is provided by changes in the curriculum. We know that as a result of the project several courses are being offered that weren't being offered before, and that the cases are being used in various classes. For example, David Smith, the project's co-director, has developed a semester-long undergraduate course on research ethics that he has now taught three times with an

enrollment of approximately 40 students per semester. Karen Muskavitch, one of our Biology participants, regularly uses our cases in her genetics classes, and has begun to have students remark that they have already discussed some of them in other courses. Peter Cherbas, our other Biology participant, has developed a graduate course in the responsible conduct of research that is now required of all third-year graduate students; the cases are a central part of that course. Bill Timberlake, one of our Psychology participants, and his colleague Ellen Ketterson (Biology) have instituted a seminar on the responsible conduct of science for the graduate students and postdoctoral fellows in their NSF-funded Research Training Group (on the integrative study of animal behavior, a cooperative effort of members of the Departments of Biology and Psychology). Copies of the Smith, Cherbas, and Timberlake syllabi are attached as Appendix F. In addition, George Heise, another of our Psychology participants, teaches an undergraduate honors seminar on research methods in which he uses several of the Catalyst case units. Some of the Graduate Instructors who teach the Psychology Department's undergraduate courses in research methods are using some of the cases as well. A new course in the Department of Anthropology will be offered this year on the ethics of conducting archaeological research. We are also aware of at least six other faculty members who are now using the Catalyst cases in their classes. We have received encouraging comments from at least thirteen non-IU faculty who are using them.

Our plans for continuation and dissemination are significant and exciting. With respect to dissemination, as we have already reported, the product of the project, the cases, will be published by a major academic press (Indiana University Press). The book will be widely advertised and reasonably priced. It will come out immediately in paperback so that it can be assigned to students for a minimal monetary investment and will relieve faculty of the burden of producing handouts or readers. In addition to the cases, the casebook will include a chapter on ethical theory, introductory texts for the cases, instructional notes (which provide some ideas for how to work with specific cases in the classroom), and an extensive annotated bibliography. With respect to continuation, we feel strongly that in addition to having access to materials to use in discussing research ethics issues with students, faculty need and want to learn how to work with these issues in the classroom. We are therefore in the process of seeking support for a program through which we would provide workshops on the teaching of research ethics for science faculty at the CIC schools (the Big Ten plus the University of Chicago). We have also begun to receive requests to make presentations on the cases and on the teaching of research ethics at other universities. We expect to make some number of these kinds of presentations in the coming years. We would like to continue Catalyst-type activities (i.e., faculty and case development) with additional combinations of disciplines, but do not now have the financial support to embark on such activities.

Two outgrowths of the Catalyst project are worth mentioning. The first is work that we have done on contract for the National Institutes of Health (NIH). Our Catalyst work on research ethics was responsible, at least in part, for our being awarded a contract to produce a second, expanded, edition of NIH's Institutional Review Board Guidebook. The Guidebook explicates the federal regulations governing the involvement of human subjects in research and provides discussions of the major ethical concepts that must be considered when reviewing human subjects research (informed consent, risk/benefit, privacy and

confidentiality, equitable selection of subjects). The book also contains chapters discussing the involvement of human subjects in various kinds of research (e.g., HIV/AIDS-related research, genetic research, transplants, epidemiological research), as well as the special considerations that must be brought to bear when certain classes of persons participate in research (e.g., children, prisoners, elderly persons, terminally ill persons, minorities, cognitively impaired persons).

A second result of the Catalyst project is the expertise that the Center now has to offer to the IU community, and of which the University is taking advantage. The Center is now recognized as the entity to which to turn with respect to research ethics issues. We have been consulted by faculty with respect to the development of courses or course units on the responsible conduct of research (e.g., the Anthropology course mentioned above), and are involved in matters of research ethics for the University's Office of the Vice President for Research. This has included not only service on misconduct committees, but also educational outreach to faculty on behalf of the Office for Research.

Summary and Conclusions

In sum, the Catalyst research ethics project achieved its stated goal of raising the awareness of faculty and students of the ethical component of research, and produced a sizable corpus of teaching materials that are being made widely available for teaching at the graduate and undergraduate levels. The advice we would give to persons interested in the project is that it is worth all the time and effort required to carry it out well. We would suggest that anyone who wishes to conduct a Catalyst-type project recognize that it will probably take more time to work through the different stages than it at first appears will be necessary. Unless the participants are already heavily invested in the topic (in which case the first goal, faculty development, is not relevant), they will need time to warm to the topic and savor the discussions; at least our participants did. We spent much more time reading about and discussing issues than we had budgeted for, but, having noted that the participants highly valued this phase of the project, we revised our time schedule to allow them to follow their curiosity and explore the subject matter further. We concluded, rightly or wrongly, that providing them with a forum for (virtually) free-wheeling discussion on topics that they had never had the opportunity to explore with colleagues from their own and different fields was one of the "hooks" that kept the group committed to the project. Catalyst was a fun and exciting project to direct, and we recommend the model to others.